

Remarks/Arguments

A. Pending Claims

Claims 1883-1886, 1888-1908, 1910-1925, 1927-1929, 1931-1960, and 5396-5415 are currently pending. Claims 1883, 1892, 1922, 1931, 5406, 5414, and 5415 have been amended. Claims 1892, 1931, 5414, and 5415 have been amended for clarification and/or correction of typographical errors. Claims 1909 and 1930 have been cancelled. Claims 5416 and 5417 are new.

B. Provisional Double Patenting Rejection

The Examiner provisionally rejected claims 1883-1886, 1888-1925, 1927-1960, and 5396-5415 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1913-1915 and 1951-1954 of copending Application No. 09/840,937; claims 1913-1915 and 1951-1954 of copending Application No. 09/841,288; claims 1909 and 1948 of copending Application No. 09/841,291; claims 1899 and 1938 of copending Application No. 09/841,300; claims 1909 and 1948 of copending Application No. 09/841,432; claims 1900 and 1939 of copending Application No. 09/841,438; claims 1913-1915 and 1951-1954 of copending Application No. 09/841,445; claims 1900 and 1939 of copending Application No. 09/841,495; claims 1909 and 1948 of copending Application No. 09/841,638; and claims 1898 and 1937 of copending Application No. 09/841,639. Applicant requests reconsideration of these rejections in light of current amendments to the claims.

C. The Claims Are Not Anticipated By Bock Pursuant To 35 U.S.C. § 102(b)

The Examiner rejected claims 1883, 1885, 1893, 1895, 1916-1918, 1922, 1924, 1932, 1934, 1955-1957, 5398-5400, 5402-5404, 5406, 5408, 5410, 5411, and 5414 under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 4,458,757 to Bock et al. (hereinafter "Bock").

Applicant respectfully disagrees with these rejections.

On page 11 of the Office Action, the Examiner states: "Claims 1891, 1894, 1898-1900, 1909, 1913-1915, 1930, 1935, 1937-1939, 1948, 1951-1954, have been identified as including subject matter which is allowable over the prior art."

Independent claim 1883 has been amended to include features of claim 1909. Amended claim 1883 describes a combination of features including: "controlling a pressure in at least a majority of the part of the formation, wherein the controlled pressure is at least about 2.0 bars absolute". Independent claim 1922 has been amended to include features of claim 1930. Amended claim 1922 describes a combination of features including: "controlling the heat such that an average heating rate of the part of the formation is less than about 1 °C per day during pyrolysis". Independent claim 5406 has been amended to include features of claim 1914. Amended claim 5406 describes a combination of features including: "providing hydrogen (H₂) to the heated part of the formation to hydrogenate hydrocarbons in the part of the formation" and "heating a portion of the part of the formation with heat from hydrogenation". Applicant respectfully requests removal of the rejections of claims 1883, 1922, and 5406.

Claims 1895, 1934, and 5410 describe a combination of features including: "wherein the produced mixture comprises condensable hydrocarbons having an API gravity of at least about 25°." Bock does not appear to teach or suggest a produced mixture comprising hydrocarbons having an API gravity of at least about 25°. Applicant respectfully requests removal of the rejections of claims 1895, 1934, and 5410.

D. The Claims Are Not Obvious Over Van Meurs In View of Bock Pursuant To 35 U.S.C. 103(a)

The Examiner rejected claims 1883-1886, 1892, 1893, 1895-1897, 1901-1908, 1910, 1911, 1916-1925, 1931, 1932, 1934-1936, 1940-1947, 1949, 1950, 1955-1960, 5396-5400, 5402-5404, 5406-5408, 5410, 5411, 5414, and 5415 under 35 U.S.C. 103(a) as obvious over

U.S. Patent No. 4,886,118 to Van Meurs et al. (hereinafter "Van Meurs") in view of Bock.

Applicant respectfully disagrees with these rejections.

Claims 1883, 1922, and 5406 have been amended to include allowable features.

Applicant respectfully requests removal of the rejections of claims 1883, 1922, 5406, and the claims dependent thereon. Applicant submits, in addition, that many of the claims dependent on claims 1883, 1922, and 5406 are separately patentable.

The Examiner states: "With regards to claim 1892; Van Meurs teaches the about 10 °C/day; the claim limitations drawn to the heating energy are nothing more than well known thermodynamic equations." The Examiner makes similar statements about claims 1931 and 5415.

Van Meurs states: "The electrical injection rate is 3.23×10^6 BTU/well per day. The temperature of the injectors attains 750° C. The production wells reach a terminal temperature of 300° C. after 33-34 years of operation." (Van Meurs, column 13, lines 13-17) Van Meurs further states: "The electrical injection rate is 10.55×10^6 BTU/well per day. The injection well temperatures reach 750° C. and the production wells reach a final temperature of 300° C. after a production life of 9-10 years." (Van Meurs, column 13, lines 44-47)

Claims 1892, 1931, and 5415 describe a combination of features including: "wherein an average heating rate (h) of the selected volume is about 10 °C/day." Applicant submits that the combination of Bock and Van Meurs does not appear to teach or suggest using a desired heating rate to calculate a maximum average heating energy/day to be applied to a selected volume of a formation. Applicant respectfully requests removal of the rejections of claims 1892, 1931, and 5415.

The Examiner states: "With regards to claims 1895-1907, 1910, and 1911; the nature of hydrocarbons produced from such heating is highly variable, and dependent upon many factors, not least of which is the characteristics of the coal. The components of the produced mixture are

deemed to be the results of design variables, including coal characteristics and temperature.”
The Examiner makes similar statements about claims 1934-1946, 1949, 1950, and 5410.

Applicant submits that the product mixtures recited in claims 1895-1907, 1910, 1911, 1934-1946, 1949, 1950, and 5410 would not be producible by a combination of the cited references. The product mixtures recited in claims 1895-1907, 1910, 1911, 1934-1946, 1949, 1950, and 5410 may be produced by controlling and/or modifying formation conditions during treatment to produce the selected results recited in the claims. Applicant respectfully requests removal of the rejections of claims 1895-1907, 1910, 1911, 1934-1946, 1949, 1950, and 5410.

E. The Claims Are Not Obvious Over Bock In View of Santourian Pursuant To 35 U.S.C. 103(a)

The Examiner rejected claims 1889, 1928, 5401, 5405, and 5413 under 35 U.S.C. 103(a) as obvious over Bock in view of U.S. Patent No. 3,165,154 to Santourian (hereinafter “Santourian”). Applicant respectfully disagrees with these rejections.

The Examiner states: “Bock fails to teach the natural distributed combustor, but teaches that any known heater can be used. Santourian teaches that a natural distributed combustor is useful in such processes for thick strata. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Bock process to have used a natural distributed combustor as taught by Santourian, and as called for in claims 1889, 1928, and 5412, for processing thick strata.”

Claims 1889, 1928, and 5412 describe a combination of features including: “wherein at least one of the one or more heaters comprises a natural distributed combustor.” Applicant’s Specification states: “As used herein, the phrase ‘natural distributed combustor’ generally refers to a heater that uses an oxidant to oxidize at least a portion of the carbon in the formation to generate heat, and wherein the oxidation takes place in a vicinity proximate to a wellbore. Most

of the combustion products produced in the natural distributed combustor are removed through the wellbore.” (Specification, page 40, lines 19-23)

Santourian states: “The essence of the invention is the establishment of an annular combustion zone around the ignition well by vertical drive and extending the combustion zone outwardly from the ignition well by either direct or inverse horizontal drive.” (Santourian, col 3, lines 56-60)

Applicant submits that Santourian does not appear to teach or suggest a natural distributed combustor as claimed by the Applicant. Applicant respectfully requests removal of the rejections of claims 1889, 1928, and 5412.

F. The Claims Are Not Obvious Over Bock In View of Bennett Pursuant To 35 U.S.C. 103(a)

The Examiner rejected claims 1888 and 1927 under 35 U.S.C. 103(a) as obvious over Bock in view of U.S. Patent No. 3,680,633 to Bennett (hereinafter “Bennett”). Applicant respectfully disagrees with these rejections.

The Examiner states: “Bock fails to teach the flameless distributed combustor, but teaches that any known heater can be used. Bennett teaches that a flameless distributed combustor is useful in such processes because it provides for a speedy ignition. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Bock process to have used a flameless distributed combustor as taught by Bennett, and as called for in claims 1888, and 1927.”

Bennett states: “Once sufficient oxidation has occurred, the formation fluids will commence to burn and the burning front will move away from the wellbore 10.” (Bennett, col. 4, lines 16-18) Applicant submits that Bennett does not appear to teach or suggest a flameless

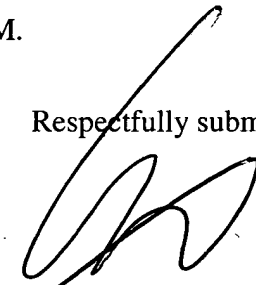
distributed combustor. Applicant respectfully requests removal of the rejections of claims 1888 and 1927.

G. Additional Comments

Applicant submits that all claims are in condition for allowance. Favorable reconsideration is respectfully requested.

Applicant believes that no fees are due in association with the filing of this document. If any extension of time is required, Applicant hereby requests the appropriate extension of time. If any fees are required, please charge those fees to Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C. Deposit Account Number 50-1505/5659-02000/EBM.

Respectfully submitted,



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